

**To:** Holler, James S. (Jim) (ATSDR/DTHHS/OD)[jsh2@cdc.gov]  
**Cc:** Cseh, Larry (ATSDR/DTHHS/OD)[loc3@cdc.gov]; Poulet, Chris[Poulet.Chris@epa.gov]; Young, Patrick[young.patrick@epa.gov]; Knowles, Robert[Knowles.Robert@epa.gov]; Pettigrew, George[pettigrew.george@epa.gov]; Strausbaugh, Dan[Strausbaugh.Dan@epa.gov]; Murray, Ed (ATSDR/DTHHS/OD)[hem0@cdc.gov]; Stephens, James W. (ATSDR/DTHHS/OD)[jws9@cdc.gov]  
**From:** Nickle, Richard (ATSDR/DTHHS/OD)  
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**Subject:** Animas River Spill - Data Review

## Deliberative Process/Ex. 5

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There are some things beyond the numbers that I think can be discerned. From those, some tentative conclusions can be made.

As usual with most inorganic analysis of water samples, EPA looked at dissolved metals and total metals. The difference between these values represent the suspended solids in the water column. While the total metals analysis, especially in Cement Creek (i.e., above Silverton), have a number of metals above our drinking water comparison values, the dissolved fraction is generally below those comparison values. This implies that the metals are complexed into insoluble salts suspended in solution. Looking at some of the photos of the meter readings on the private side of the EPA website, it looks like, as the pH rose to around 5 due to dilution, the insoluble salts precipitated out of solution. This pH of 5 coincides with the vicinity of the mouth of Cement Creek (i.e., where the creek flowed into the Animas River). Unless something happened to reduce the pH below 5 again, these salts would remain undissolved but suspended in the water.

In addition, the flow rate at the USGS gage in the Animas River near Silverton is about 10 times the flow of Cement Creek at the gage near the Creek's mouth and the flow rate of the San Juan River near Farmington, NM is about 10 times the flow rate of the Animas. While the surge is clearly discernible as a peak in the flows in the Animas River near Silverton, there is no such peak in the San Juan. With this amount of water moving this fast, it is unlikely that the pH would change significantly or that the suspended solids will drop out of solution. They would likely be diluted first and only drop out of solution completely when the water slows down (probably in Lake Powell).

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As for the color, according to the USGS mineral database, this area has a high concentration of iron (from around 5% up to 25%). The data in the Animas River is reporting concentrations at several stations of from 6% up to 89% iron in the total metals analysis with less than 1% iron in the dissolve

fractions. In Cement Creek, the dissolved iron is between 1-2%. Chances are the Gold King Mine is a better source of iron than gold. As the concentration of iron decreases from dilution or sedimentation, the color should go away.

## **Deliberative Process/Ex. 5**

*Rich Nickle*

*ATSDR Emergency Response*